## Detterman, Mark, Env. Health

**From:** Andy Lojo <andrew.lojo@terraphase.com>
**Sent:** Tuesday, July 11, 2017 5:56 PM
**To:** Steve Michelson; Detterman, Mark, Env. Health
**Cc:** Yola Bayram; Lance; Jeffrey Lawson (jsl@svlg.com); Chris Jones; Donald Sobelman (dsobelman@downeybrand.com); Roe, Dilan, Env. Health
**Subject:** Comments on Proposed Vapor Intrusion Work Plan - Fuel Leak Case no. RO0000151, re: Jefferson Court Apartments LLC
**Attachments:** Terraphase Comments on Vapor Intrusion WP July 7 2017.pdf

Good Evening Steve and Mark,

Attached are our comments on the proposed work. We have focused on the soil gas, sub-slab, and groundwater sampling and will provide additional comments on indoor air sample collection if necessary. This is organized into two parts. Part 1 provides our comments on the number and placement, and timing of sample collection. Part 2 provides purely technical comments on the sample collection procedures and protocols.

Please let me know if you have questions or would like to discuss these comments.

Steve, we would like to begin our site meeting on Thursday, 09:00 on the ARC site, so that we can go over introductions, and preliminary discussions there instead of on the apartment complex to minimize impact to tenants.

Thanks

Andy

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# Memorandum

**To:** **Mark Detterman, ACDEH and Steven Michelson, AWR**
**From:** **Andrew Lojo,**
**Date:** **July 11, 2017**

**Subject:** **Comments on "*Addendum to Conceptual Site Model and Work Plan (ERS, January 2013), Additional Investigation Work Plan for 581 18th Street, Oakland, California, 1700 Jefferson Street, Oakland, California"* Prepared by Applied Water Resources July 7, 2017. (Fuel Leak Case No. RO0000151)**

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Dear Mr. Detterman and Mr. Michelson

Terraphase Engineering Inc. (Terraphase) has prepared this Memo on behalf of Jefferson Court Apartments, LLC to provide technical comments and request modifications and/or clarifications on the scope of work proposed at the subject site. We have reviewed the subject Work Plan and ACDEH July 7, 2017 Conditional Approval Letter. We have also reviewed AWR's SOPs for soil gas, and groundwater sample collection provided to us previously. Our comments are organized into two parts:

1) comments focusing on the number and placement and timing of sample collection; and
2) comments focusing on the sample collection procedures and protocols.

**Part 1**

We understand that the primary objective of the proposed work is to further evaluate the potential risks to the quality of indoor air within the apartment building. It also appears that a second objective of the proposed work is to further delineate and monitor the extent of petroleum in groundwater in the northeast direction.

We understand the importance of both objectives and are primarily concerned with assessing potential indoor air risk to the tenants at this time. We do not want to install groundwater monitoring wells inside the building, unless they are installed to monitor the effectiveness of a remediation system. We will allow collection of a grab groundwater sample, to accomplish the delineation objective.

We are in general agreement with the number of sub-slab and soil gas samples proposed subject to: 1) confirmation that 5 of each can be placed in the building without undue disturbance to the tenants; 2) the sub-slab and soil gas samples should be co-located; and 3) the soil gas and sub-slab samples should be spaced as evenly as possible in the building. The proposed map focuses the samples on the western portion of the building which would not represent average conditions or capture all potential areas of intrusion. There is also a sample point proposed in each apartment unit. Ideally, we will find suitable areas near but not inside individual tenant's apartment units. We also recommend that you install the soil gas samples 5 feet below the building slab rather than 5 feet below the column footing depth, since the slab is likely in direct contact with the subsurface even though the column footings are deeper.

We are also in general agreement with the proposed plan to collect the soil gas and sub-slab vapor samples before proceeding with indoor air samples. We are unclear based on our review of the Work Plan and proposed schedule however, exactly how much time or how many subparts of Task 6 are proposed to be conducted before proceeding to indoor air sample collection if necessary. If the sub-slab samples are above ESLs it will be critical to proceed with indoor air sampling as soon as possible so that adequate measures can be implemented if necessary to mitigate indoor air risks to the tenants. We therefore request that the sub-slab samples be analyzed on a rush 24hr turnaround, and that the indoor air sampling process begin rapidly if the results exceed RWQCB ESLs. We will provide additional comments on the indoor air sampling process if necessary.

**Part 2**

**Workplan:**

Task 3: Ground Water Monitor Wells and Samples

Sample Collection-

1) The Work Plan states that the ground water samples will be collected using low flow sampling methods but does not elaborate on the procedures or methods. Therefore, the following comments are based on the provided AWR groundwater sampling SOP and monitor well data sheets recorded during the last round of sampling.
    a. Low flow purge rate should be between 100 and 500 milliliters per minute and be maintained at a rate roughly equivalent to the rate of recharge in the well during both purging and sampling. Turning on and off the pump during purging and sampling to allow the well to recharge should not be considered low flow sampling. Monitor well data sheets provided in the data transmittal letter do not document flow rates or volumes of water pumped during purging and sampling.
    b. Total draw-down of the well should not exceed 1-foot total during low flow purging and sampling (otherwise switch to 3 well volumes or purge and recharge). Depth to water and total volume purged should be recorded with each water quality measurement

these fields were left blank on the data sheets during the previous round of groundwater sampling).

c. The "3 well volume method" may be used if a well cannot maintain a minimum recharge rate of 100 milliliters per minute. Sampling may proceed following the continuous purge of 3 well volumes.
d. The "purge and recharge method" may be used only after attempts to collect samples using the low flow and 3 well volume methods have been made. If a well is purged dry during the previous two methods then sampling should proceed immediately once the well archives 80% recharge but no later than 24 hours after being purged dry.

2) Concentrations of TPHg and benzene detected in courtyard groundwater samples suggest the presence of separate phase NAPL. Historical reports also document the presence of free-phase LNAPL as far away as MW-5. Monitoring wells should therefore be gauged for separate phase product prior to each sampling event.

Task 4: Soil Vapor Wells and Samples from the Bottom of the Vadose Zone

Installation-

1) The Work Plan proposes soil vapor wells within the building as well as alternate locations in the courtyard should the primary locations be inaccessible. Existing soil vapor well SV4 is proposed to be sampled as an alternative if the SV21 location is inaccessible. SV4 is not shown on the figure or demonstrated to be existing in previously collected data. SS4 is shown on the figure in the courtyard adjacent to the residences and in recent data however, a sub-slab vapor well should not be used as an alternative to a deeper soil vapor well.
2) The height of the sand pack and dry bentonite barrier are not specified in the Work Plan. A 1-foot sand pack and a 1 foot of dry bentonite barrier should be constructed for consistency with the 2015 DTSC Advisory. The height of the sand pack in the SV wells is indicated to be greater than 2 feet in Table 3 of the recently submitted data transmittal letter. Does this include the sand pack and the dry bentonite?
3) A neat cement-bentonite slurry is specified to be used as the seal from the top of the dry bentonite barrier to the surface. If the neat cement-bentonite slurry seal is to be hydrated above-ground then a tremie pipe should be used when pouring the seal to prevent bridging in the bore-hole.

Sample Collection-

1) The Work Plan specifies that soil vapor samples will be collected in accordance with the 2015 DTSC Advisory at least 48 hours after the completion of each soil vapor well.
    a. If a summa canister is used to purge the well prior to sampling then the purged volume should be calculated based on the observed canister vacuum where a 6-liter summa canister starts at 30 inches of mercury so each 5 inches of mercury corresponds to 1 liter of volume. The flow rate is going to vary based on the flow controller (set by the laboratory) and the vacuum of the canister, so timing is not a good way to measure purged volume. A low flow air pump such as a Gilian GilAir® Plus (or similar) with a digital display of the purged volume could provide a more precise purging method.

   b. There are no sampling procedures described in the workplan for sorbent tube sampling (TO-17 analysis). Please provide SOP for collection of these samples.
   c. A MGD-2002 helium detector (or similar) should be used to continuously monitor and maintain the helium concentration inside the shroud during sample collection at a minimum of 20%. This will allow for a more accurate leak percentage calculation if helium is detected in a sample.
2) After reviewing the AWR soil gas field worksheets from the last sampling event, the following additional information should be provided on the worksheets going forward.
   a. Worksheets do not show calculations for required purge volumes. Purge volumes should be calculated to include the vapor probe tip, tubing, 30% available sand porosity in the well sand pack, and an assumed 50% porosity for the dry bentonite seal zone.
   b. Less than three well volumes were purged from most of the soil vapor wells as indicated by the case volumes and purge volumes. A minimum of three well volumes should be purged from each soil vapor well prior to sampling per the 2015 DTSC Advisory.
   c. The sub-slab points are documented as being purged with a hand pump but do not indicate the volume purged. A syringe fitted with a three-way valve would allow for accurate measurements of smaller purge volumes.
   d. Helium shroud measurements (% Helium) should be documented every 1-2 minutes during sampling along with the corresponding time of measurement and remaining canister vacuum. Additional helium should be added to the shroud incrementally to maintain the desired concentration.
   e. For the sorbent tube field worksheets, there is no documentation of helium being used as a leak detection compound. Worksheets should include helium percentage inside the shroud during sorbent tube sampling.

<u>Task 5 Sub-Slab Vapor Samples:</u>

Installation-

1) According to the figure a SS4 sub-slab vapor point has already been installed in the courtyard, the location IDs inside the apartment building should be adjusted accordingly (SS5, SS6, SS7, SS8 and SS9)
2) For the sub-slab wells, no installation procedures have been specified in the Work Plan nor has an AWR SOP been provided. Installation should be conducted in accordance to the Cox-Colvin SOP for VaporPin™ installation and extraction.
3) The Work Plan specifies that sub-slab samples will be collected no sooner than 20 minutes after installation of the VaporPin™ however, at least 2 hours of time should elapse following the installation of a sub-slab VaporPin™ to allow the subsurface to equilibrate per the 2015 DTSC Advisory before collecting sub-slab samples.

Sample Collection-

Comments for the collection of sub-slab vapor samples are the same comments for soil vapor wells.